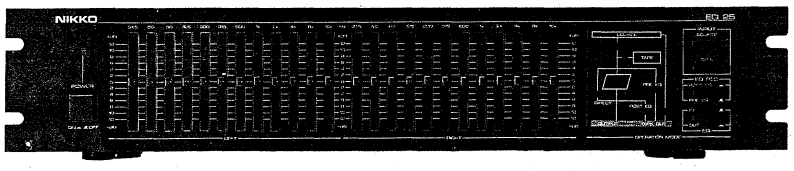
NIKKO EQUALIZER

EQ-25

GRAPHIC EQUALIZER



SERVICE MANUAL

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SAFETY INSTRUCTIONS

PRECAUTIONS DURING SERVICING

1. Parts identified by these ⚠ symbol parts are critical for safety. Replace only with same parts number specified.

2. Other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation.

   These must also be replaced only with specified replacements.

   Examples: HF converters, tuner units, RF cables, noise blocking capacitors, noise blocking filters, etc.

2. Use specified internal wiring
   a) Primary leads
   b) Wires covered with PVC tubing
   c) Double insulated wire

4. Use specified insulating materials for hazardous live parts.
   a) Insulation Tape
   b) Insulated Barriers (Spacers)
   c) PVC tubing
   d) Plastic screws for fixing microswitch (Especially in turntable)
   e) Terminal strips

5. When replacing the primary components (transformer, power supply cord, switch by-pass capacitor, etc.), wrap ends of wires securely about the terminals before soldering.

   Where hand soldering is involved, a minimum spacing below and between terminals of uninsulated live parts of primary or supply circuitry through air or over surface is to be maintained.

   120V appliance : 3 mm spacing min.
   220V and 240V appliance : 6 mm spacing min.

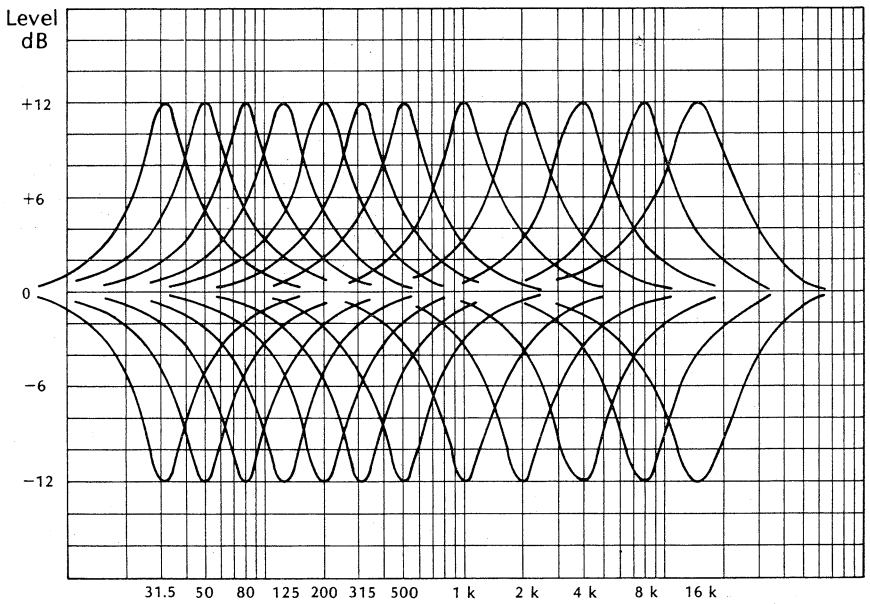
6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal resistance, rectifiers, etc.)

7. Check that replaced wires do not contact sharp edges or pointed parts.

8. Do not leave electric conductive parts (screws, droplets, etc.) inside the appliance.

SAFETY RECHECK AFTER SERVICING

Confirm that the specified insulation resistance between power plug prongs and externally exposed parts of the appliance is greater than 10Mohms, however, for equipment with external antenna terminals (tuner, receiver, etc.) specified insulation resistance should be more than 2.2Mohms (ground terminals, in-output jacks etc.).



Frequency Response

SPECIFICATIONS

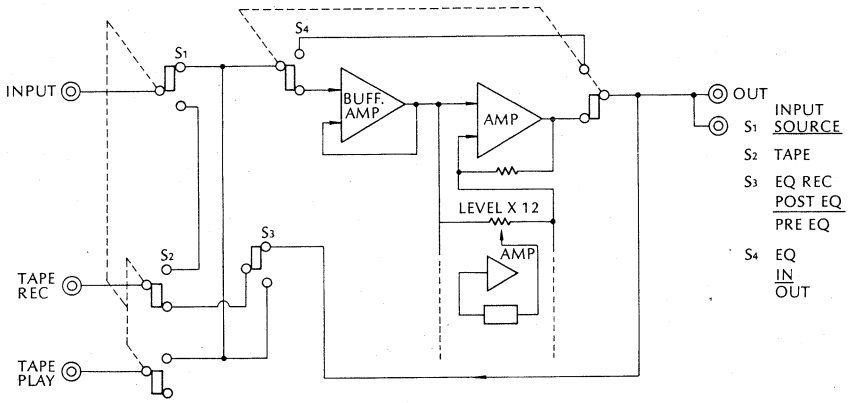
Control Frequency Bands	31.5 Hz, 50 Hz, 80 Hz, 125 Hz, 200 Hz, 315 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, 8kHz and 16 kHz
Control Range	±12 dB
Output Level/Impedance	7 V/470 ohms (max) 1 V/470 ohms (Rated)
Total Harmonic Distortion	0.004%
S/N Ratio (IHF-A)	110 dB
Imput Impedance	100 kohms
Frequency Response	10 Hz — 50 kHz ± 1 dB

General

Power Requirements	AC 120 V, 60 Hz for USA and Canada AC 220 V, 50 Hz for Europe
Power Consumption	14 W
Dimensions	482 (W) x 92 (H) x 231 (D) mm (19 x 3-5/8 x 9-3/32 inches
Weight (excl. package)	4.3 kg (9.4 lbs)

* Specifications are subject to change without notice.

BLOCK DIAGRAM



CIRCUIT DESCRIPTION

SIMULATED INDUCTIVE DEVICE

In this resonant circuit, an inductor is not used for an element which controls the frequency. A simulated inductive device is used, which consists of an operational amplifier, resistors and capacitors, therefore any resonant frequency can easily be selected.
This simulated inductive device is shown in Figure 2 (a). Its equivalent device is shown in Figure 2 (b).

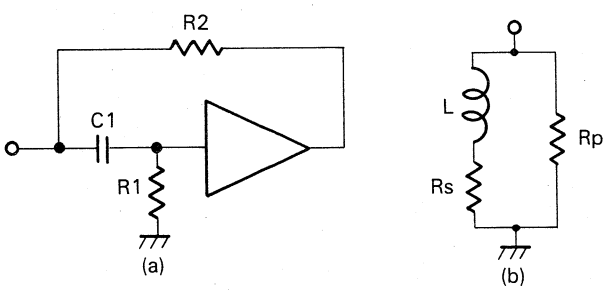


Figure 2. Simulated inductive device:
(a) circuit diagram; (b) equivalent circuit

The values of L, Rp and Rs shown in Figure 2 (b) are given by:

$$L = C1\ R1\ R2,\ Rs \simeq R2,\ Rp \simeq R1$$

BOOST OR CUT CIRCUIT

In this circuit, a simulated inductive device which controls the frequency (called resonant circuit) is connected to the input section to make a wide dynamic range.

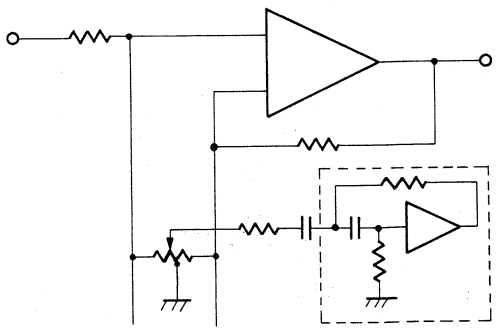


Figure 3. Boost or cut circuit

DISASSEMBLY

• METAL COVER REMOVAL

Remove four tapping screws from the top of the metal cover. Remove four screws from both sides of the metal cover.

• BOTTOM PLATE REMOVAL

1. Remove two PWB supports (No. 1 and 2).
2. Remove eight screws (No. 3~6, 8, 9, 11 and 12) (Photo 1).

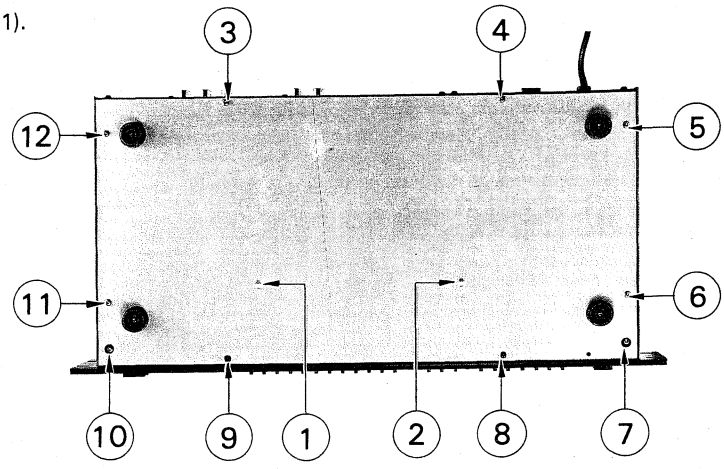


Photo 1

• FRONT PANEL REMOVAL

1. Remove two screws (No. 7, 8, 9 and 10) (Photo 1).
2. Remove two screws (No. 1 and 6) (PHOTO 2).

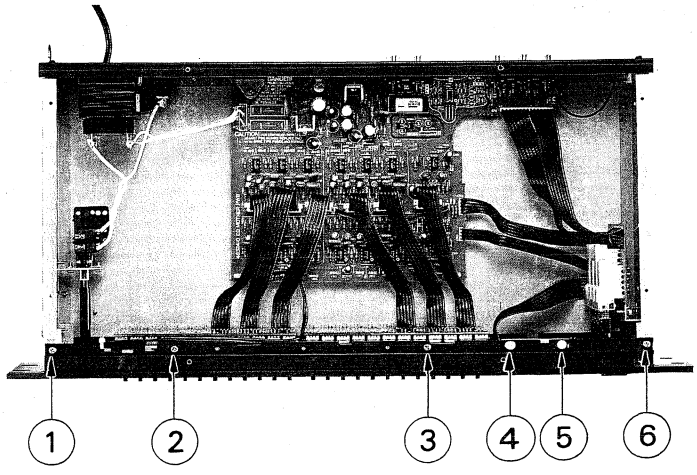


Photo 2

• SLIDE VR PWB REMOVAL

Remove two screws (No. 2 and 3) (Photo 2).

• FLOW CHART SECTION PWB REMOVAL

Remove two Nylon Rivets (No. 4 and 5) (Photo 2).

• POWER TRANSFORMER REMOVAL

1. Disconnect all wires from the power transformer.
2. Remove two tapping screws (No. 1 and 2) (Photo 3) and lift the power transformer up and out of the back plate.

— To reassemble, reverse the procedure.

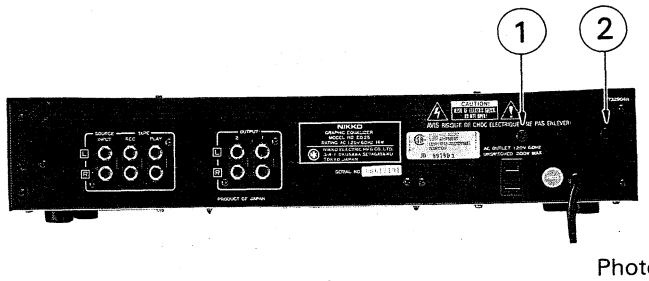
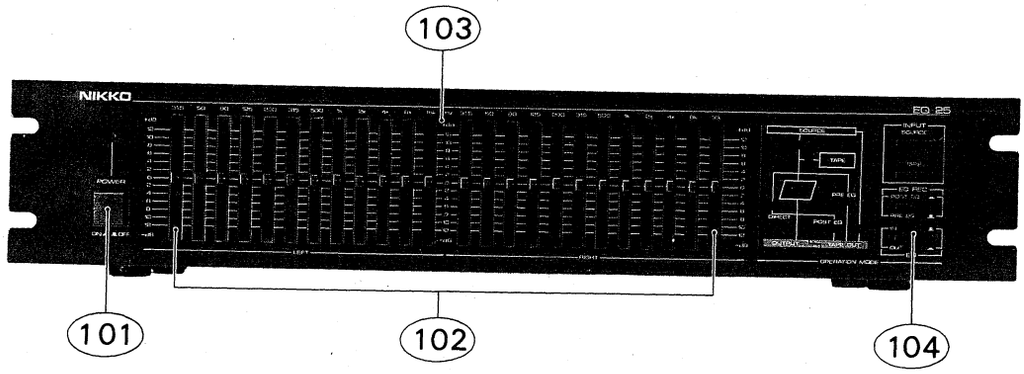
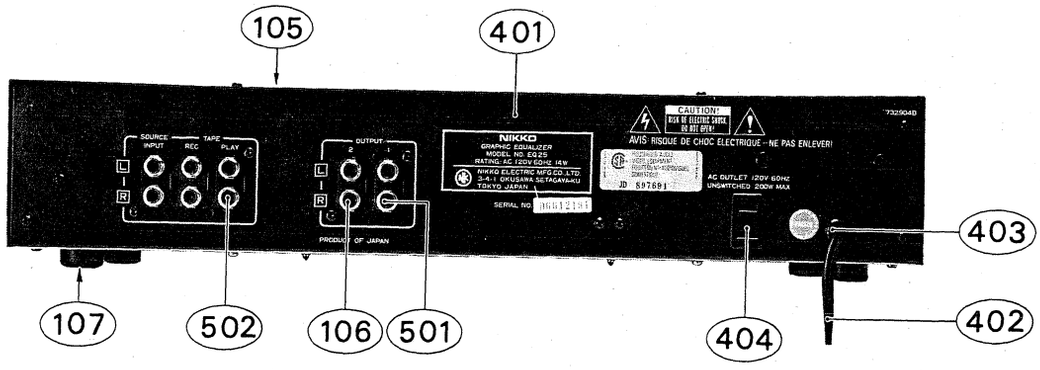
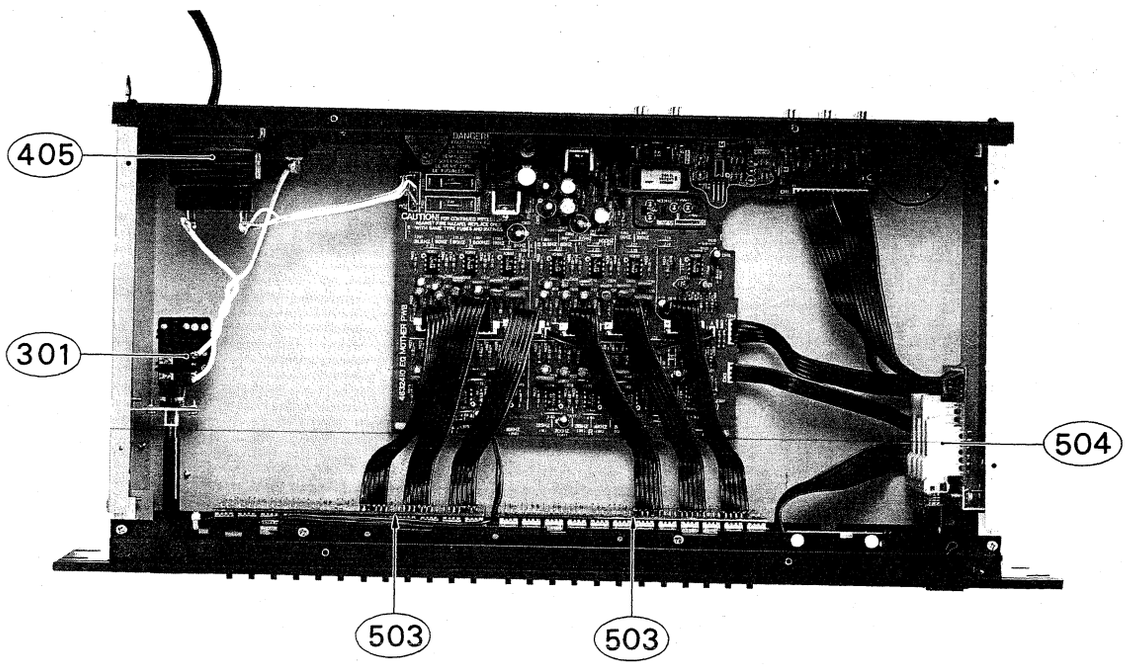


Photo 3

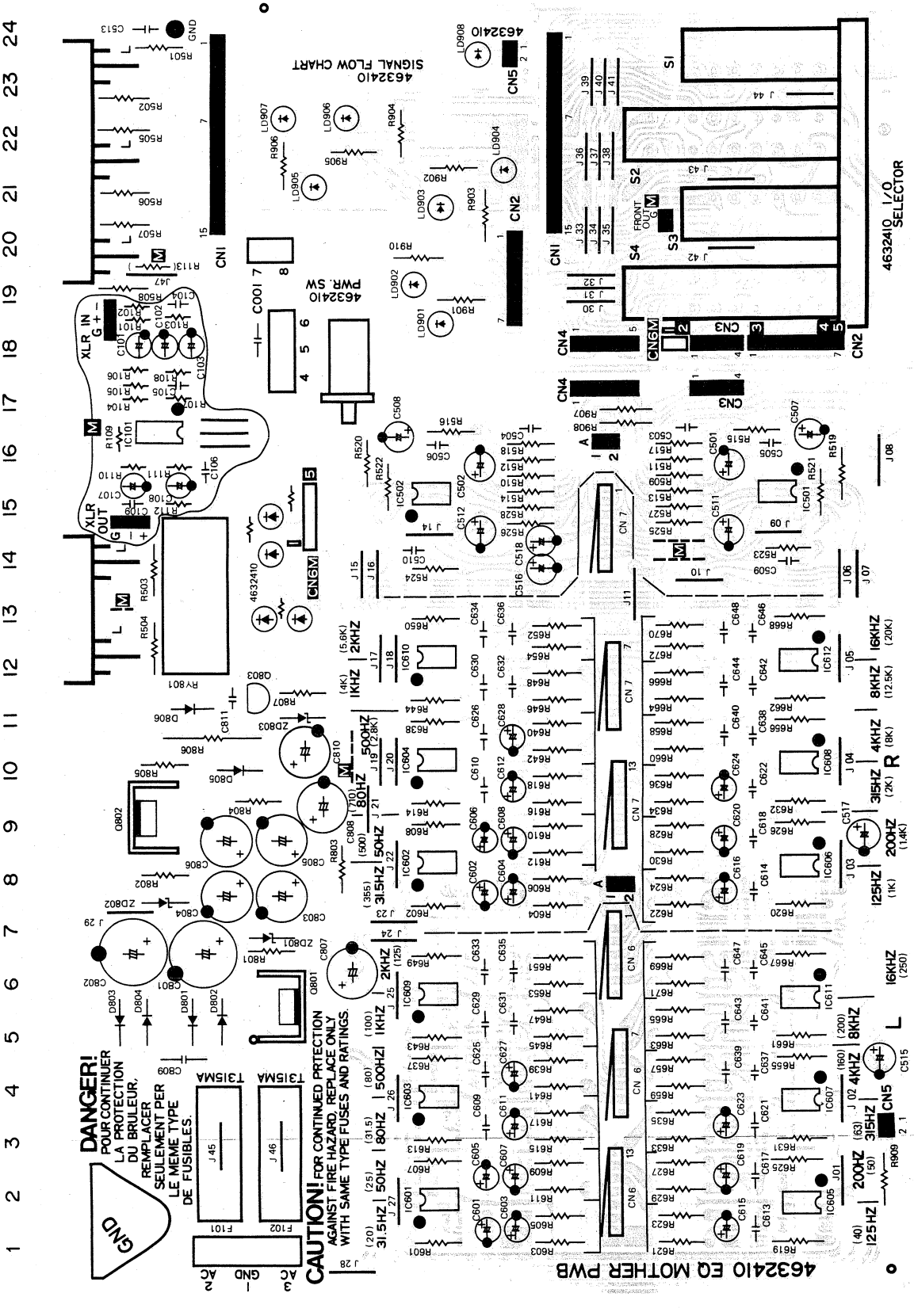
PARTS LOCATION







PW BOARD


463241O EQ MOTHER PWB
SIGNAL FLOW CHART
463241O
463241O I/O SELECTOR
PWR. SW
DANGER!
POUR CONTINUER LA PROTECTION DU BRULEUR, REMPLACER SEULEMENT PER LE MEME TYPE DE FUSIBLES.
CAUTION! FOR CONTINUED PRTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE FUSES AND RATINGS.
T315MA
T315MA
F101
F102
GND
AC
GND
AC
XLR IN
XLR OUT
FRONT OUT
CN1
CN2
CN3
CN4
CN5
CN6
CN7
S1
S2
S3
S4
31.5HZ
50HZ
80HZ
500HZ
1KHZ
2KHZ
200HZ
315HZ
4KHZ
8KHZ
16KHZ
125HZ
1K
2K
8K
20K

PARTS LIST

1. + Numberals in file indicate the quantity of parts used in one type.

2. ++ TR: Transistor
FET: Field effect transistor
IC: Integrated circuit
VR: Volume controlo (Variable resistor)
RES: Carbon film fixed resistor
MO-RES: Metal oxide film fixed resistor
CEM-RES: Cemented wirewound fixed resistor
C-CAP Ceramic capacitor
E-CAP: Aluminum electrolytic capacitor
M-CAP: Polyester film capacitor

3. Assemblies and parts are subject to change without notice

4. Parts ordering procedure:

⚠ Include in any order

a. Part number.
b. Part description.
c. Model number.

(Any of the above lacking from an order may delay shipment of that order.)

KEY NO.	SYMBOL NO.	TYPE+ W	E	U/T	DESCRIPTION	PART NO.
001		1	1	1	Carton Box EQ25	9827110
002		2	2	2	Pad	9840710
003		1	1	1	Sack,Polyethylene Cloth A1	9640720
004		1	1	1	" #13	9640320
005a		1			Owner's Manual EQ25	960458E
005b			1	1	Owner's Manual EQ25	960458K
006		2	2	2	Pin Plug Cord 2T-75	962026A
007				1	AC Plug Adapt 2T	4550230
	CABINET ASSEMBLY					
103		1	1	1	Panel EQ25	7886870
101		1	1	1	Button M15SQ-BK-Power	7852390
104		4	4	4	Button P319-WB-INPUT,EQ,REC,EQ	7853690
		4	4	4	Relay Shaft 24	7404110
102		24	24	24	Slide Knob -Slide Volume	7854520
105		1	1	1	Metal Cover	7820820
106		1	1	1	Plate,Bottom EQ25	7329030
107		4	4	4	Foot,TG	7401350
	CHASSIS ASSEMBLY					
		1	1	1	DUST COVER EQ25	7003590
		1	1	1	DUST COVER GUARD	7003600
108		2	2	2	PWB SUPPORT 6L	7406190
	BACK PLATE ASSEMBLY					
401a		1			Plate,Back EQ25(W)	732904B
401b			1		Plate,Back EQ25(E)	732905B
401c				1	Plate,Back EQ25(U/T)	7329060
⚠ 405a		1			Power Trans PT,T-1-565	1105650
⚠ 405b			1		Power Trans PT,T-1-566	1105660
⚠ 405c				1	Power Trans PT,T-1-587	1105870
⚠ 402a		1			Plug Cord DP-70	606007A
⚠ 402b		*(1)			Plug Cord SPT-1(POL)	606013A
⚠ 402c			1		Plug Cord CEE-2T	600510A
⚠ 402d				1	Plug Cord DP-70 DEC100	606011A
		1		1	Stopper,Cord SR-3P-4	7400620
			1		Stopper,Cord SR-4N-4	7400690
⚠ 404a		1			Socket,AC	4500150
⚠ 404b				1	Inlet 3P,AC	4500230
⚠ 404c		*(1)			Socket AC,AC-T03	4500320
	* : CANADA MODEL ONLY					
	EQ MOTHER P.W. BOARD ASSEMBLY					
	INPUT TERMINAL SECTION					
501		1	1	1	CBA PINTER 2P x 2	4444070
502		1	1	1	CBA PINTER 2P x 3	4446030
A24	C513	1	1	1	C-CAP 0.022MF	231223Z
B23,B22	R501,502	2	2	2	RES 1M OHM 5% 1/4W	328105J
B13,B13	R503,504,505	4	4	4	RES 100K OHM 5% 1/4W	328104J
B22,B21	506					
B20,B19	R507,508	2	2	2	RES 1M OHM 5% 1/4W	328105J

KEY NO.	SYMBOL NO.	TYPE+ W	E	U/T	DESCRIPTION	PART NO.
	REGULATOR SECTION					
B12	RY801	1	1	1	REED RELAY LAB2NS-LC	1700520
E6	Q801	1	1	1	TR 2SD 880	513106S
A9	Q802	1	1	1	TR 2SB 834(O,Y)	511129S
D12	Q803	1	1	1	TR 2SA 1015	510102S
B6,C6	D801,802,803	4	4	4	Diode S5566B	560080S
A6,A6	804					
C10,B11	D805,806	2	2	2	Diode DS448	501026S
D7,A8	ZD801,802	2	2	2	Zenner Diode RD16EB3	502071S
D11	ZD803	1	1	1	Zenner Diode RD6.2EB2	502048S
B6,A6	C801,802	2	2	2	E-CAP 470MF 35V	211435S
E7,B7	C803,804	2	2	2	E-CAP 10MF 25V	211320S
E8,C8	C805,806	2	2	2	E-CAP 220MF 25V	211332S
E7,E9	C807,808	2	2	2	E-CAP 10MF 25V	211320S
B4	C809	1	1	1	C-CAP 0.01MF 500V	238103P
E10	C810	1	1	1	E-CAP 330MF 16V	211233S
C11	C811	1	1	1	M-CAP 0.01MF 50V	222103J
D7,B8	R801,802	2	2	2	RES 1.2K OHM 5% 1/4W	328122J
E8,C9	R803,804	2	2	2	FRES 10 OHM 5% 1/4W	328100L
B10	R805	1	1	1	RES 47K OHM 5% 1/4W	328473J
B10	R806	1	1	1	FRES 330 OHM 5% 1/2W	329331L
D11	R807	1	1	1	RES 47K OHM 5% 1/4W	328473J
	FLAT AMP SECTION					
N15,G15	IC501,502	2	2	2	IC TA 75559P	518252S
L16,H15	C501,502	2	2	2	E-CAP 4.7MF 35V	211415S
K16,H16	C503,504	4	4	4	C-CAP 47PF 50V	232470J
M16,G16	505,506					
N17,F17	C507,508	2	2	2	E-CAP 10MF 25V	211320S
M14,G14	C509,510	2	2	2	C-CAP 150PF 50V	232151J
L15,H15	C511,512	2	2	2	E-CAP 4.7MF 35V	211415S
O4,I14	C515,516	4	4	4	E-CAP 10MF 25V	211320S
O9,I14	517,518					
K16,H16	R509,510	2	2	2	RES 1K OHM 5% 1/4W	328102J
K16,H16	R511,512,513	4	4	4	RES 100K OHM 5% 1/4W	328104J
K15,H15	514					
M16,G17	R515,516	2	2	2	RES 4.7K OHM 5% 1/4W	328472J
K16,H16	R517,518	2	2	2	RES 100K OHM 5% 1/4W	328104J
O16,F16	R519,520	2	2	2	RES 100K OHM 5% 1/4W	328104J
N16,F16	R521,522,523	4	4	4	RES 4.7K OHM 5% 1/4W	328472J
M14,G14	524					
K15,H15	R525,526	2	2	2	RES 470 OHM 5% 1/4W	328471J
K15,H15	R527,528	2	2	2	RES 100K OHM 5% 1/4W	328104J
J17,J17	R907,908	2	2	2	RES 1.2K OHM 5% 1/4W	328122J
O3	R909	1	1	1	RES 2.7K OHM 5% 1/4W	328272J
	BYPASS FILTER SECTION					
G2,G8	IC601 ~ 612	12	12	12	IC TA 75559P	518252S
G4,G10						
N2,N8						
N4,N10						
G6,G12						
N6,N12						
H2,H8	C601,602	2	2	2	E-CAP 0.15MF 50V ±10%	211509B
H2,H8	C603,604	2	2	2	E-CAP 1.5MF 50V ±10%	211511B
H3,H9	C605,606	2	2	2	E-CAP 0.1MF 50V ±10%	211501B
H3,H9	C607,608	2	2	2	E-CAP 1MF 50V ±10%	211510B
H5,H10	C609,610	2	2	2	M-CAP 0.056MF 50V	222563J

PART ORDERING PROCEDURE ----- DO NOT USE THE "REFERENCE" number and "SYMBOL" number. (these are control # for the factory only. (Include in any order: a. Part number b. Part description c. Model number. (any of the above lacking from an order may delay shipment of that orer.)

KEY NO.	SYMBOL NO.	TYPE+ W	E	U/T	DESCRIPTION	PART NO.
H5,H10	C611,612	2	2	2	E-CAP 0.68MF 50V ±10%	211507B
M2,M8	C613,614	2	2	2	M-CAP 0.033MF 50V	222333J
M2,M8	C615,616	2	2	2	E-CAP 0.47MF 50V ±10%	211505B
M3,M9	C617,618	2	2	2	M-CAP 0.018MF 50V	222183J
M3,M9	C619,620	2	2	2	E-CAP 0.33MF 50V ±10%	211503B
M4,M10	C621,622	2	2	2	M-CAP 0.015MF 50V	222153J
M4,M10	C623,624	2	2	2	E-CAP 0.15MF 50V ±10%	211509B
H5,H11	C625,626	2	2	2	M-CAP 0.0068MF 50V	222682J
H5,H11	C627,628	2	2	2	E-CAP 0.15MF 50V ±10%	211509B
H6,H12	C629,630	2	2	2	M-CAP 0.0033MF 50V	222332J
H6,H12	C631,632	2	2	2	M-CAP 0.082MF 50V	222823J
H7,H13	C633,634	2	2	2	M-CAP 0.0015MF 50V	222152J
H7,H13	C635,636	2	2	2	M-CAP 0.039MF 50V	222393J
M5,M11	C637,638	2	2	2	C-CAP 680PF 50V	232681J
M5,M11	C639,640	2	2	2	M-CAP 0.022MF 50V	222223J
M6,M12	C641,642	2	2	2	C-CAP 390PF 50V	232391J
M6,M12	C643,644	2	2	2	M-CAP 0.01MF 50V	222103J
M7,M13	C645,646	2	2	2	C-CAP 220PF 50V	232221J
M7,M13	C647,648	2	2	2	M-CAP 0.0047MF 50V	222472J
G1,G7	R601,602	2	2	2	RES 680 OHM 5% 1/4W	328681J
I1,I7	R603,604	2	2	2	RES 150K OHM 5% 1/4W	328154J
I1,I8	R605,606	2	2	2	RES 150 OHM 5% 1/4W	328151J
G2,G9	R607,608	2	2	2	RES 680 OHM 5% 1/4W	328681J
I2,I9	R609,610	2	2	2	RES 150K OHM 5% 1/4W	328154J
I2,I8	R611,612	2	2	2	RES 220 OHM 5% 1/4W	328221J
G3,G9	R613,614	2	2	2	RES 680 OHM 5% 1/4W	328681J
I3,I9	R615,616	2	2	2	RES 150K OHM 5% 1/4W	328154J
I3,I10	R617,618	2	2	2	RES 330 OHM 5% 1/4W	328331J
N1,N7	R619,620	2	2	2	RES 680 OHM 5% 1/4W	328681J
K1,K7	R621,622	2	2	2	RES 150K OHM 5% 1/4W	328154J
K1,K8	R623,624	2	2	2	RES 330 OHM 5% 1/4W	328331J
N2,N9	R625,626	2	2	2	RES 680 OHM 5% 1/4W	328681J
K2,K9	R627,628	2	2	2	RES 150K OHM 5% 2/4W	328154J
K2,K8	R629,630	2	2	2	RES 330 OHM 5% 1/4W	328331J
N3,N9	R631,632	2	2	2	RES 680 OHM 5% 1/4W	328681J
K3,K9	R633,634	2	2	2	RES 150K OHM 5% 1/4W	328154J
K3,K10	R635,636	2	2	2	RES 180 OHM 5% 1/4W	328181J
G4,G11	R637,638	2	2	2	RES 680 OHM 5% 1/4W	328681J
I4,I11	R639,640	2	2	2	RES 150K OHM 5% 1/4W	328154J
I4,I10	R641,642	2	2	2	RES 270 OHM 5% 1/4W	328271J
G5,G44	R643,644	2	2	2	RES 680 OHM 5% 1/4W	328681J
I5,I11	R645,646	2	2	2	RES 150K OHM 5% 1/4W	328154J
I5,I12	R647,648	2	2	2	RES 390 OHM 5% 1/4W	328391J
G6,G13	R649,650	2	2	2	RES 680 OHM 5% 1/4W	328681J
I6,I13	R651,652	2	2	2	RES 150K OHM 5% 1/4W	328154J

KEY NO.	SYMBOL NO.	TYPE+ W	E	U/T	DESCRIPTION	PART NO.
I6,I12	R653,654	2	2	2	RES 390 OHM 5% 1/4W	328391J
N4,N11	R655,656	2	2	2	RES 680 OHM 5% 1/4W	328681J
K4,K11	R657,658	2	2	2	RES 150K OHM 5% 1/4W	328154J
K4,K10	R659,660	2	2	2	RES 390 OHM 5% 1/4W	328391J
N5,N11	R661,662	2	2	2	RES 680 OHM 5% 1/4W	328681J
K5,K11	R663,664	2	2	2	RES 150K OHM 5% 1/4W	328154J
K5,K12	R665,666	2	2	2	RES 330 OHM 5% 1/4W	328331J
N6,N13	R667,668	2	2	2	RES 680 OHM 5% 1/4W	328681J
K6,K13	R669,670	2	2	2	RES 150K OHM 5% 1/4W	328154J
K6,K12	R671,672	2	2	2	RES 330 OHM 5% 1/4W	328331J
EQ MOTHER P.W. BOARD ASSEMBLY						
	PRIMARY SECTION					
301		1	1	1	Push Switch SDL-1P-POWER	4041810
		1	1	1	C-CAP 0.0047MF	239472B
	INPUT SELECTOR SECTION					
504		1	1	1	Push Switch, TETRA	4042730
	LED FLOW CHART SECTION					
G18	LD901	1	1	1	LED TLR120	5060480
F19	LD902	1	1	1	LED TLG113A-Tape	5064700
G21	LD903	1	1	1	LED TL0113A-EQ	5060900
H22,D21	LD904 ~ 907	4	4	4	LED TLR120	5060480
E22,D22						
H24	LD908	1	1	1	LED TLS153 -Power	5060910
H19,H21	R901,903,904	5	5	5	RES 2.7K OHM 5% 1/4W	328272J
F22,E22	905,906					
D22						
G2	R902	1	1	1	RES 1.5K OHM 5% 1/4W	328152J
G20	R910	1	1	1	RES 1.8K OHM 5% 1/4W	328182J
03	R909	1	1	1	RES 2.7K OHM 5% 1/4W	328272J
	EQ UR P.W. BOARD ASSEMBLY					
503		24	24	24	SLIDE VR LL03A 250K	411013A

SEMICONDUCTOR DATA

TRANSISTORS

DEVICE TYPE	APPLICATIONS	STRUCTURE†	MAXIMUM RATINGS Absolute-Maximum Values: (Ta = 25°C unless otherwise specified)					ELECTRICAL CHARACTERISTICS Typical Values: (Ta = 25°C unless otherwise specified)													MANUFACTURER
			Collector-to-Base Voltage V_{CBO} (V)	Emitter-to-Base Voltage V_{EBO} (V)	Collector Current I_C (mA)	Collector Dissipation P_C (mW)	Junction Temperature T_j (°C)	Collector Cutoff Transfer Ratio I_{CBO} (μA)	Collector Cutoff Transfer Ratio V_{CB} (V)	Static Forward-Current Transfer Ratio h_{FE}	Static Forward-Current Transfer Ratio V_{CE} (V)	Static Forward-Current Transfer Ratio I_C (mA)	Collector-Emittor Saturation Voltage $V_{CE(sat)}$ (V)	Collector-Emittor Saturation Voltage I_C (mA)	Collector-Emittor Saturation Voltage I_B (mA)	Gain-Bandwidth Product f_T f_{ob}* (MHz)	Gain-Bandwidth Product V_{CE} V_{CB}* (V)	Gain-Bandwidth Product I_E I_C* (mA)	Output Capacitance Cob (pF)	Others	
2SA1015 (Y)	AF, General	PNP Si	−50	−5	−150	400	125	−0.1 max.	−50	120 −240	−6	−2	−0.3 max.	−100	−10	80 max.	−10	−1*	7 max.	TOSHIBA	
2SB834 (C)	AF, Voltage amp.	PNP Si	−60	−5	−3A	30W	150	−100 max.	−56	100	−5	−500									TOSHIBA
2SD880 (Y,GR)	AF, Power Amp.	NPN Si	60	7	3A	30W (Tc=25°)	150	100 max.	60	100 −300	5	0.5A	1 max.	3A	300	3	5	−500	70		TOSHIBA

DIODES, LED'S

DEVICE TYPE	APPLICATIONS	STRUCTURE†	MAXIMUM RATINGS Absolute-Maximum Values: (Ta = 25°C unless otherwise specified)								ELECTRICAL CHARACTERISTICS Typical Values: (Ta = 25°C unless otherwise specified)							MANUFACTURER
			Reverse Surge Voltage V_{Rsurge} (V)	Peak Reverse Voltage V_{RM} (V)	Reverse Voltage V_R (V)	Peak Forward Voltage V_{FM}	Peak Forward Current I_{FM}FM (V)	Average Rectified Current Io (mA)	Forward Surge Current $I_{F\ surge}$ (A)	Junction Temperature T_j (°C)	Total Power Dissipation Po (mW)	Forward Current I_{Fmin} (mA)	Forward Current Test Condition V_F (V)	Forward Voltage I_{Fmin} (V)	Forward Voltage Test Condition I_F (mA)	Reverse Current I_{Rmin} (uA)	Reverse Current Test Condition V_R (V)	Others	
DS448	Medium speed switching	Si-P		35	30		360	120	0.5	175	300			1.0	30	1.0	30		SANYO
S5566B	Rectifier	Si-DJ			100			1.0A	45	150				1.2	1.0A	10			TOSHIBA
TLG113A	Lamp (green)	GaP			4			I_F = 25 mA		75	100			2.8	20	5	4	Iv = 17.0 mcd (I_F = 15 mA)	TOSHIBA
TLO113A	Lamp (yellow)	GaAsP			4			I_F = 25 mA		75	100			2.8	20	100	4	Iv = 8 mcd (I_F = 15 mA)	TOSHIBA
TLS153	Lamp (red)	GaAsp			4			I_F = 25 mA		75	70			2.8	20	100	4	Iv = 100 mcd (I_F = 15 mA)	TOSHIBA
TLR120	Lamp (red)	GaP			4			I_F = 20 mA		75	90			2.8	20	5	4	Iv = 4.0 mcd (I_F = 15 mA)	TOSHIBA

ZENER DIODES

DEVICE TYPE	APPLICATIONS	STRUCTURE†	MAXIMUM RATINGS Absolute-Maximum Values: (Ta = 25°C unless otherwise specified)			ELECTRICAL CHARACTERISTICS Typical Values: (Ta = 25°C unless otherwise specified)													MANUFACTURER
			Total Power Distortion Po (mW)	Zener Current Iz (A)	Junction Temperature Tj (°C)	Zener Voltage Vz MIN (V)	Zener Voltage Vz TYP (V)	Zener Voltage Vz MAX (V)	Zener Voltage Test Conditions Iz (mA)	Differential Resistance z TYP (Ω)	Differential Resistance z MAX (Ω)	Differential Resistance Test Condition Iz (mA)	Temperature Coefficient z TYP (%/°C)	Temperature Coefficient z MAX (%/°C)	Temperature Coefficient Test Condition Iz	Reverse Current Iz MAX (μA)	Reverse Current Test Condition V_R	Others	
RD6.2EB	Regulator	Si-J	400		175	5.8		6.6	20		20	20				5	3.0		NEC
RD16EB	Regulator	Si-J	400		175	15.3		17.1	10		35	10				2	12		NEC

INTEGRATED CIRCUITS TA75559P

- **Manufacturer: TOSHIBA**
- **Application: Dual Operational Amplifier**

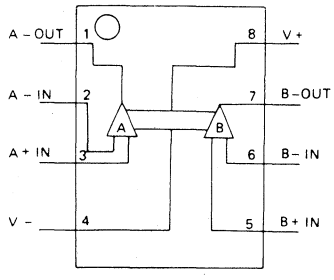
Absolute Maximum Ratings

Supply Voltage	±18V	Input Voltage	±15V
Internal Power Dissipation	500 mW	Storage Temperature Range	−40°C to +125°C
Differential Input Voltage	±30V	Operating Temperature Range	−20°C to +75°C

ELECTRICAL CHARACTERISTICS (Vcc = ±15V, Ta = +25°C unless otherwise noted

PARAMETER	CONDITIONS	MIN	TYPE	MAX	UNITS
Input Offset Voltage	Rs ≤ 2 kΩ			6.0	mV
Input Offset Current				200	nA
Input Bias Current				500	nA
Large-Signal Voltage Gain	RL ≥ 2 kΩ Vout = ±10V	20,000			V
Output Voltage Swing	RL ≥ 10 kΩ	±12			V
Common Mode Rejection Ratio	Rs ≤ 10 kΩ	70			dB
Supply Voltage REjection Ratio	Rs ≤ 10 kΩ			150	μV/V
Power Consumption				170	mW

TERMINAL GUIDE (TOP VIEW)



(TOP VIEW)

SCHEMATIC DIAGRAM